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Can Capital Projects Promote Both Economic Development and U.S. Commercial Interests?

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Summary

United States exporters complain that although other countries use foreign aid to develop export markets in developing countries the United States does not. And while it is clear that a donor's tied aid for projects will generate exports of equipment and machinery, even more important are the longer term effects. Many donors use their aid programs to develop markets and build future demand for their exporters. Their aid projects are a loss leader. They are designed to create demand for spares and replacement parts and encourage brand loyalty that eventually will generate major orders for new equipment and machinery. While the U.S. aid program places heavy emphasis on technical assistance, training, institutional development, policy reform, and sustainability, other donors are busy pushing their own capital exports.

Capital projects are a relatively small part of USAID's program, representing only 5 to 10 percent of the total portfolio. Some experts have suggested that the Agency should make greater use of capital projects in its assistance program. They argue that capital projects meet developmental needs and also help U.S. exporters who supply the projects' equipment, materials, and engineering services.

Because many capital projects include a large component of imported U.S. equipment, U.S. firms benefit in the first round from USAID-financed sales. If firms then gain a foothold through USAID projects in the developing country market, they also benefit in later rounds with follow-on commercial sales. In short, USAID capital projects develop export markets by introducing U.S. brands and U.S. technical standards to developing countries, thus generating future business for U.S. firms.

USAID's Center for Development Information and Evaluation (CDIE) carried out an assessment to determine whether capital projects can stimulate economic development while promoting U.S. commercial interests. CDIE found that capital projects are clearly important for development. In many developing countries inadequate infrastructure constrains economic growth and holds back the private sector. A few critical investments, such as an all-weather

road or reliable electrical supply, are often all that is needed to bring forth a major increase in agricultural and industrial production. In addition capital projects can provide important benefits (e.g., improved health from clean water) for low-income members of society.

CDIE also found that capital projects have rarely been able to develop commercial markets for U.S. exporters. Capital projects will help increase commercial U.S. exports only if those exports are competitive in price, quality, and service and if the economy of the importing country is growing. Otherwise, there is little that USAID capital projects can do (see Box 1).

Background

Capital projects often include the equipment and machinery that developed countries are competing fiercely to sell overseas. Developed countries see a growing market in developing countries and view aid programs as a way to claim a share of that market. There is, therefore, increasing interest among U.S. exporters and in some parts of Congress and the Executive Branch in using foreign assistance to advance U.S. commercial interests without jeopardizing the international development objectives of the foreign aid program. Congressional proposals have called for establishing a capital projects fund, a mixed credit program, and other trade-related programs.

To determine how and under what conditions capital projects can support both development and U.S. commercial interests, CDIE analyzed seven key questions (see Box 2). CDIE defined a capital project as:

"A project and supporting activities which encourage economic development by creating, replacing, or rehabilitating physical infrastructure or industrial plant and equipment in a developing country."

The definition stresses physical assets and development. By focusing on physical assets it includes the bricks and mortar of construction along with capital equipment and machinery. It does not include capital finance projects that provide only credit or loans. It excludes raw materials and intermediate goods. The development requirement means that the project must be related to the improvement of a country's economic and social welfare. In this context, most industrial and infrastructure investments are developmental. The supporting activities include training, technical assistance, and equipment to assist in capital project management, operations, and maintenance.

CDIE's analysis started with a review of academic research on the developmental and commercial benefits of capital projects. It included an examination of World Bank experience with capital projects. CDIE then moved to create a database of 400 completed USAID capital projects, from which a representative sample of 68 projects was selected for close study. CDIE analyzed Project Papers, audits, and evaluations for the sample projects against the

seven evaluation questions listed in Box 2.

To include the perspective of U.S. exporters in the analysis, CDIE surveyed a representative sample of 44 firms. These firms had participated in the 68 USAID projects reviewed. CDIE sent questionnaires to the firms and then followed up in some cases with telephone interviews. The questions focused on the commercial side of USAID capital projects and how such projects contribute to export development for U.S. firms.

For the next phase of the assessment, the field analysis, the ideal approach would have been to examine a sample of 30-40 USAID capital projects in 5-6 countries; given resource and time limitations such a massive study was not possible. However, it was possible to answer the evaluation questions by analyzing in depth USAID capital project experience in only one country Egypt. In dollar terms, Egypt is USAID's second largest program (Israel is the largest), and USAID has implemented more than 50 capital projects over the last 15 years there. Middle-East peace concerns are an important reason for the large program.

Findings

CDIE used a single set of questions to guide its examination of the academic literature and World Bank experience, of a sample of USAID's worldwide capital project experience, and of the experience of U.S. exporters. The same questions were then used for the Egypt case study and were asked of U.S. exporters in Egypt, USAID project managers, and Egyptian business and government officials. Asking the same questions of diverse sources made it possible to develop and then cross-check and confirm findings. The following discussion summarizes the main issues and findings for the seven assessment questions.

1. USAID capital projects have rarely been able to leverage other donor or private-investor participation. There were no cases found of private-investor funding and only a few cases where another donor provided parallel funding of a capital project.
It has been argued that capital projects leverage private sector and other donor participation. Some suggest that this happens in two ways: (1) when other donors are brought into a USAID project and spend a portion of their funds on purchases from U.S. firms or (2) through the demonstration effect U.S. firms build a reputation of good performance on USAID projects, and then win export orders for other donor projects.

Of 44 U.S. firms that CDIE surveyed, 9 felt that USAID contracts had led to business with other donors. However, only four could cite a specific USAID project or contract that had brought business with another donor. It appears USAID projects generate some, but not much, business from other donors for U.S. firms.

Donor funding packages are usually put together by the World Bank or the regional multilateral development banks. In most cases each donor takes a portion of the project and applies its own procurement rules to that portion.

In Egypt donors tend to fund only their own aid projects and tie procurement to their own country. In most cases joint or parallel donor funding is limited to World Bank coordinated efforts.

2. With U.S. exporters having difficulties in the competitive battle with other exporters, and with weak markets in many developing countries, USAID capital projects have not been a useful tool for promoting U.S. commercial exports.

The academic literature contains little to support the argument that foreign aid is a good way of supporting a donor's commercial interests. The survey of 44 U.S. firms found that if firms were already active in the beneficiary country, USAID projects did little to improve their market position. For firms entering a new market, 21 percent received follow-on business after the USAID project. Although encouraging, this survey finding does not indicate a resounding success for market development. The survey probed deeper to assess the competitiveness of the U.S. firms. It found that for many of the firms USAID contracts were important as a starting point but few of the firms were able to convert their USAID contracts into non-USAID business. Many of the firms considered themselves to be in weak competitive positions compared with Japanese or European exporters something the USAID projects did little or nothing to improve.

The Egypt case study confirmed these findings. Commercial (non-USAID-funded) sales are small compared with the volume of U.S. business carried out under the USAID program. More than half of the U.S. firms that supply equipment and services on USAID-funded capital projects stated they would have no or extremely limited business in Egypt if the USAID capital projects program were to end.

3. Capital projects, particularly infrastructure ones, are critical elements of economic growth and are universally viewed as prerequisites to development. Capital projects usually have fair to good ERRs. However, many USAID and World Bank projects have low rates of return because of developing country institutional and economic policy constraints.

Many developing countries suffer from inadequate infrastructure, which hinders their economic development. For example, railways lack capacity, so crops often do not reach markets on time. Unreliable electrical systems force industry to shut down, making production planning difficult. Lack of irrigation water during critical times reduces farmers' chances of harvesting full crops. Or low output from a cement plant results in construction industry slow downs. Given problems such as these, it is reasonable to assume that targeted capital investments can generate large economic benefits.

One measure of a capital project's contribution to a country's economic development is its ERR. A minimally acceptable ERR is usually around 10 to 15 percent and highly successful projects have ERRs above 20 percent.

Based on the review of USAID Project Papers, average ERRs at the time of project design were estimated at 15.4 percent. Actual project results may be quite different. The problem is that almost no information exists on actual ERRs after project completion. The World Bank, however, regularly analyzes completed capital projects and computes ERRs. Based on a 1989 review of evaluation results, the bank found these EER rates by sector: roads, 25 percent; agriculture, 16 percent; power, 11 percent; irrigation, 9 percent; and potable water, 8 percent.

For this assessment CDIE examined nine USAID capital projects in Egypt. The economic analysis shows a mixed picture with generally low to medium ERRs. The three Egyptian electrical power projects had an average rate of return of only 6.4 percent. The four telecommunications projects, at 12 percent, were much better. Computing ERRs for the two water and sewer projects was not possible, because health benefits could not be quantified.

The low rates in Egypt are not the result of technical problems the projects are well designed, use appropriate technology, and are operated in a technically sound manner. In large measure their poor performance can be attributed to restrictive economic policies, such as government price controls, regulations, subsidies, and employment and management strictures that cause inefficient production and use of project outputs. The failure to price project outputs high enough to cover costs leads to overconsumption and inefficient uses.

4a. Capital projects focus heavily on economic infrastructure, which is essential for industry, commerce, and agriculture. Infrastructure development is indisputably needed for economic growth and in particular to support growth in the private sector. Egypt is an excellent example of how USAID-funded infrastructure helped support a rapidly growing private sector. Without that infrastructure it is doubtful whether the private sector could have flourished as it did in the 1980s and into the 1990s.

USAID's electrical power, telecommunications, water, and sewer projects in Egypt provided essential services for industry and commerce to work more efficiently and effectively. Manufacturing could not have expanded as rapidly as it did without dependable utility services. The tourism industry illustrates the contribution of electrical power to the private sector. The consistent supply of power in Egypt's major cities and resort sites has been key to the rapid growth of tourism. At $2 billion to $3 billion annually, tourism is Egypt's largest source of foreign exchange, supports a large employment base, and provides markets for Egyptian products. Investments in capital infrastructure provide important benefits for Egypt's private sector. Without adequate transportation, electricity, water, and telephones, businesses are reluctant to invest, and private sector growth suffers. Egypt provides an excellent example of the sectors in which investments in capital infrastructure have created a critical enabling condition for private sector growth.

4b. A wide range of capital projects has been designed in part to alleviate poverty or to help meet the needs of the poor. The projects seem to be generally successful in achieving those objectives. Water and sanitation projects have had particularly strong direct health benefits. Rural roads and irrigation projects are often important in enabling the rural poor to boost their productivity and incomes.

Critics argue that too many capital projects use overly sophisticated technology, fail to generate jobs, and benefit mainly the well-to-do. Yet, capital projects (water supply, sewers, schools, health clinics, for example) can provide direct social benefits and increase employment and income of the poor. What has been the impact of USAID capital projects on basic human needs? In two-thirds of the sample USAID projects, poverty alleviation or basic human needs was a project goal. Nearly one-third of project evaluations found that the project was or likely would become successful in raising incomes. Nearly half of the project documents suggested that capital projects could have a positive impact on education and health.

In the case of Egypt, improved hygiene, cleanliness, and other benefits from better water and sewage service has met a critical health need. Although several factors affect health, clean water and sewage treatment are essential for improving health conditions. Diarrheal diseases (often a result of contaminated water and poor sanitation) are a leading cause of sickness and death among infants and children. From 1977 to 1987, when USAID water and sewage projects were being expanded, Egypt's rate of infant-diarrhea-related death dropped nearly 50 percent. During the same period diarrheal death rates for children aged 1 to 4 years dropped by two-thirds.

Projects in the social sectors (education, health, water, and sanitation) have the most direct service and welfare benefits for the poor. The linkage is more indirect with other sectors but projects with high ERRs boost a country's rate of growth and generate important benefits for the poor. The major resource the poor have to offer is their labor. If the economy grows rapidly, more jobs and higher paying jobs are created, which raises the income of the poor. The poor benefit from capital projects that have high ERRs, even if the projects are not targeted directly to meet basic human needs.

5. Both World Bank and USAID projects face difficulties when developing country governments are reluctant to adopt needed institutional and economic policy reforms. For example, when user charges are insufficient to cover project costs and institutional capability too weak to provide for adequate operations and maintenance, the sustainability of projects is threatened. The question of sustainability is central to all development programs: Does the developing country have the institutional capabilities (financial, technical, and managerial) to continue the project effectively once donor funding ends? This problem may affect capital projects more than other types of development assistance because capital projects often use sophisticated

imported equipment and foreign technology. If the developing country lacks the capability to operate the new equipment, operations and maintenance problems will occur and the project may fail.

The relationship between institutional capabilities for managing and maintaining capital facilities and the viability of the facilities is perhaps the one issue the literature points to with firm conclusion. Innumerable studies indicate that when capital projects fail they do so much more frequently because of weaknesses in the institutions responsible for managing them than because of technical flaws in the facilities' design or construction. The very strong evidence in this regard suggests that donors should invest more capital development funding in technical assistance and training for institutional development.

Evidence from the sample of 68 projects studied suggests that sustainability might be a problem in many USAID projects. Half of the projects had no requirements for the host government to develop either new dedicated maintenance programs or institutions to support the new infrastructure. Only 46 percent of the projects had host country maintenance requirements and only 55 percent had participant training. User charges help ensure financial sustainability, but for 55 percent of the projects, user charges were not envisioned. For the completed projects that relied on user charges, most were not successful at recovering them.
A continuing theme in World Bank literature is the failure of local institutions to adequately operate and maintain capital equipment and infrastructure. Of the 1,250 capital projects with institutional development components carried out between 1978 and 1987 only 59 percent were considered likely to be sustainable. The World Bank found that sustainability of capital projects depends strongly on host country policies, particularly with regard to the collection of user charges for infrastructure services.

In Egypt USAID capital projects have been operating well, but several factors threaten their sustainability, for example, inadequate financial resources and lack of project autonomy. Egyptian utilities are not allowed to raise tariffs to adequate levels and do not receive sufficient funding to cover costs. The Government mandates personnel and operating practices, which have created a totally inadequate salary structure and extreme overstaffing. Technical operations and maintenance practices vary greatly, but lack of preventive maintenance and spares is a common problem. Training and employee compensation are also inadequate and must be improved if performance is to be maintained.

6. Developing countries are almost always short of capital, but more capital investment is not always the solution. Projects operating in adverse policy settings are not likely to contribute significantly to development. Inadequate infrastructure often has more to do with inefficient use of existing assets rather than with the need for new assets. The solution in such cases is better management and economic policy reform rather than more capital projects.

Restrictive developing country economic policies have a major impact on projects; thus, the economic policy environments (both macro and sectoral) are major determining factors influencing project ERRs.

For as long as aid programs have existed, donors have used assistance to encourage change. Although donors cannot really buy reforms, they can use their programs to support policy changes. For example, if USAID funds an electrical generation project and the developing country sets electricity rates too low, the project will not be viable financially. The same applies to road projects where the developing country has no interest in road maintenance. Although the donor could build the road, in a few years the road would be in disrepair and unusable. In such cases, it makes sense to link the assistance to host government policy changes.
Based on results from the sample of USAID capital projects, policy reform was apparently not a major objective. In 86 percent of the projects conditionality was not used. Of the policy reforms set as conditions of aid, only half had been successfully adopted or implemented. When a country failed to comply with the conditionality, USAID rarely took steps toward enforcement.
The World Bank had similar problems. Capital projects with policy conditions were not very effective. The most frequent failure was the inability to sustain user charges.

USAID's large capital projects programs have tended to be in countries where U.S. political and security concerns are paramount. In the last 10 years typical countries included Pakistan, Philippines, Jordan, and Egypt. Egypt is a good example of how USAID had great difficulty pushing for policy reform with both capital projects and other types of assistance. Capital project policy conditionality was often not achieved or only met many years later. U.S. political and security interests usually proved more important than development interests, and economic policy reform almost always took a back seat to such nondevelopmental concerns.

7. USAID has made sure that projects meet the development needs of recipient countries. Development and U.S. commercial interests have not conflicted in terms of suitability of host country conditions for the capital equipment or technology provided.

A key question is whether or to what extent a focus on commercial objectives might undermine development effectiveness. This may be more of a problem with capital projects that are undertaken to address both trade and development objectives. Capital projects driven by donors' export interests have been criticized for being unduly capital intensive, having too high an import component, paying inadequate attention to the policy or institutional setting, and using technologies inappropriate to the factor endowments and level of development of the recipient countries.

The published literature leans heavily toward the conclusion that donors' efforts to promote their own commercial interests through capital projects are inconsistent with and counterproductive to the promotion of development. The argument is that the tying of aid distorts trade patterns and promotes the export of goods in which

the donor country is not competitive. Over the long run the best way for a donor to increase its exports to developing countries is by promoting economic growth in those countries, which in turn will increase demand for imported goods. The newly industrialized countries in Asia, such as Korea and Taiwan, are examples of rapidly growing markets for U.S. exports.

Analysis of USAID's worldwide experience indicates that developmental needs rather than U.S. commercial interests were the primary goal and driving force behind capital projects. In only 14 percent of the projects studied was the sale of U.S. equipment or machinery a stated goal. Moreover, waivers allowing the host government to purchase goods and services from non-U.S. suppliers were granted in 13 percent of the projects. In 67 percent of the projects, U.S-provided technology was considered appropriate to the needs of the recipient. In only 20 percent of the projects were problems reported because of inappropriate technology.
In Egypt equipment and technology were selected on the basis of Egypt's developmental needs rather than U.S. commercial interests. U.S. commercial concerns did not distort the developmental benefits of USAID capital projects.

Lessons Learned

Commercial benefits
USAID capital projects have not been an important tool for developing commercial markets for U.S. exporters. Procurement tying and buy America work effectively for USAID project procurement but follow-on commercial exports have been weak or nonexistent. USAID-funded projects have benefited little from other donor funding or private investor participation. They have not been able to leverage other funding sources. USAID capital projects have mostly been designed to meet specific developmental needs and to follow U.S. Government procurement regulations. To more strongly encourage participation from other donors and private investors, USAID would have to refocus and change its project design criteria.

Developmental benefits
Capital projects are essential parts of country development programs. Reliable and appropriate infrastructure is critical to private sector growth. Capital projects designed to alleviate poverty or help meet the needs of the poor have generally been successful.

USAID managers should insist on realistic analysis of economic rates of return (ERR) on capital project investments. And they should approve only those projects thus projected to achieve high EERs. A well-designed capital project, operating in a good economic policy environment, can generally achieve high ERRs, most projects have had only low to medium rates of return. They should do much better with a minimum ERR of at least 10 to 15 percent and ideally well above 20 percent. At the time of project selection and design, USAID managers need to take a hard look at the assumptions behind the cost-benefit analysis. When projects are being implemented, reality checks on assumptions concerning policy reform, prices, and subsidies, are needed.

Major attention should be focused on economic policy reform and institutional reform. Both the World Bank and USAID have found that technical and engineering issues are rarely the problem inappropriate economic policies and ineffective institutions most often threaten project viability and sustainability. However, capital projects have not been very successful as a means to encourage policy reform. When considering a new capital project, USAID should rigorously analyze the economic and institutional policy environment. If conditions are not favorable, it may not make sense to go ahead with the project. Alternatively, USAID should insist that policy reforms are put in place before project approval or before obligated funds are disbursed.

This Evaluation Highlights was prepared by Joseph Lieberson, an economist in the Center for Development Information and Evaluation (CDIE). It summarizes the findings from Capital Projects: A Synthesis of Findings (PN-AAX-294). There are four Technical Reports in the capital projects series: Literature Review and Supplier Survey (PN AAX-288), Egypt Case Study (PN AAX-281), U.S. Aid and Trade in Egypt (PN AAX-265), and Economic and Financial Analyses of Nine Capital Projects in Egypt (PN AAX-282). These documents may be ordered from the CDIE Development Information Services Center (DISC), 1611 North Kent Street, Suite 200, Arlington VA 22209-2111, Telephone (703) 351-4006, Fax (703) 351-4039.